Introduction
Intermediate Microeconomics

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What is Microeconomics

- It is about the allocation of scarce resources
  - how consumers can best allocate their limited incomes to the various goods and services available for purchase
  - how workers can best allocate their time to labor instead of leisure, or to one job instead of another
  - how firms can best allocate limited financial resources to hiring additional workers versus buying new machinery, and to producing one set of products versus another

Methodological Features

- **Rationality**: maximizing the object function of the decision-maker
  - It's not necessarily selfishness and can be consistent with altruism
- **Stable preferences:** constant throughout the model
  - *Preferences are unobservable*
  - *Emphasis on man-made constraints and institutional design*
- **Equilibrium analysis:** a tool to aggregate behaviors of individuals and predict the outcome of human interactions

- **Efficiency criterion**: a normative notion of optimality
  - What is efficient outcome?
  - Is there any room for improvement in efficiency?

Positive & Normative Analysis

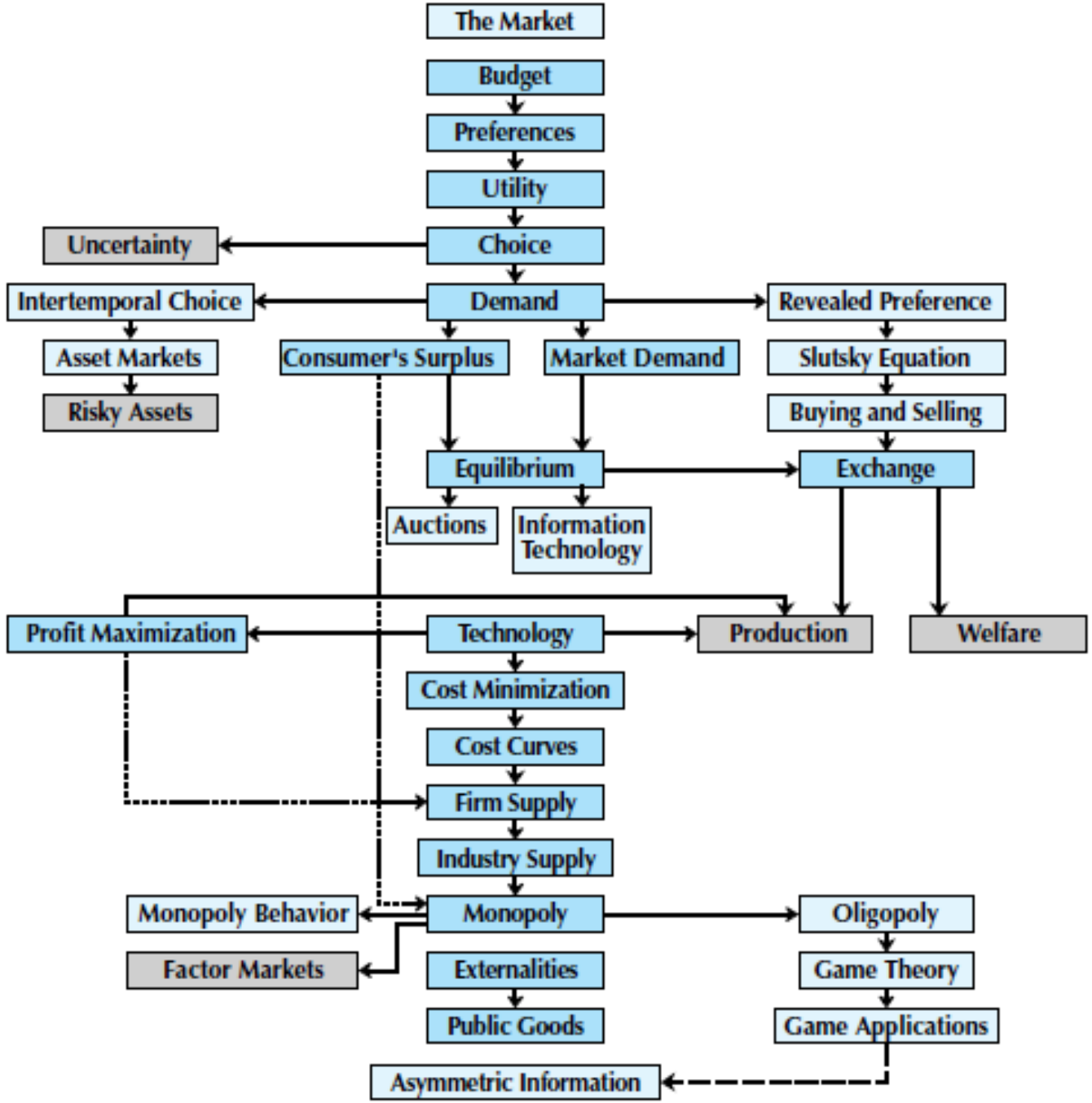
- **Positive Analysis**（实证分析）–statements that describe the relationship of cause and effect
  - Questions that deal with explanation and prediction
    - What will be the impact of an import quota on foreign cars?
    - What will be the impact of an increase in the gasoline excise tax?
- **Normative Analysis**（规范分析）–analysis examining questions of what ought to be
  - Often supplemented by value judgments
    - Should the government impose a larger gasoline tax?
    - Should the government decrease the tariffs on imported cars?

Is Economics Useful?

- Becoming a thinker
- Changes the way you view life and understand problems
  - Opportunity cost
- An all round major

Course Outline

- Consumer theory (1-15)
- Producer theory (18-27)
- Market equilibrium (16-17, 30-32)
- Special topics on equilibrium


The Market
Budget
Preferences
Utility
Choice
Uncertainty
Intertemporal Choice
Demand
Revealed Preference
Asset Markets
Risky Assets
Consumer's Surplus
Market Demand
Slutsky Equation
Buying and Selling
Equilibrium
Exchange
Auctions
Information Technology
Profit Maximization
Technology
Production
Welfare
Cost Minimization
Cost Curves
Firm Supply
Industry Supply
Monopoly Behavior
Monopoly
Oligopoly
Factor Markets
Externalities
Game Theory
Public Goods
Game Applications
Asymmetric Information

Economic Modeling

- What causes what in economic systems?
  - Which variables are determined outside the model (exogenous)
  - Which variables are to be determined by the model (endogenous)
- At what level of detail shall we model an economic phenomenon?

Modeling the Apartment Market

- Central question: How are apartment rents determined?
- Suppose (simplifying assumptions)
  - apartments are close or distant, but otherwise identical
  - distant apartments rents are exogenous and known
  - many potential renters and landlords, i.e., competitive market

A Normative Question

- Will the allocation of apartments be desirable?
- Need to know:
  - Who will rent close apartments?
  - At what price?

Two Principles in Economics

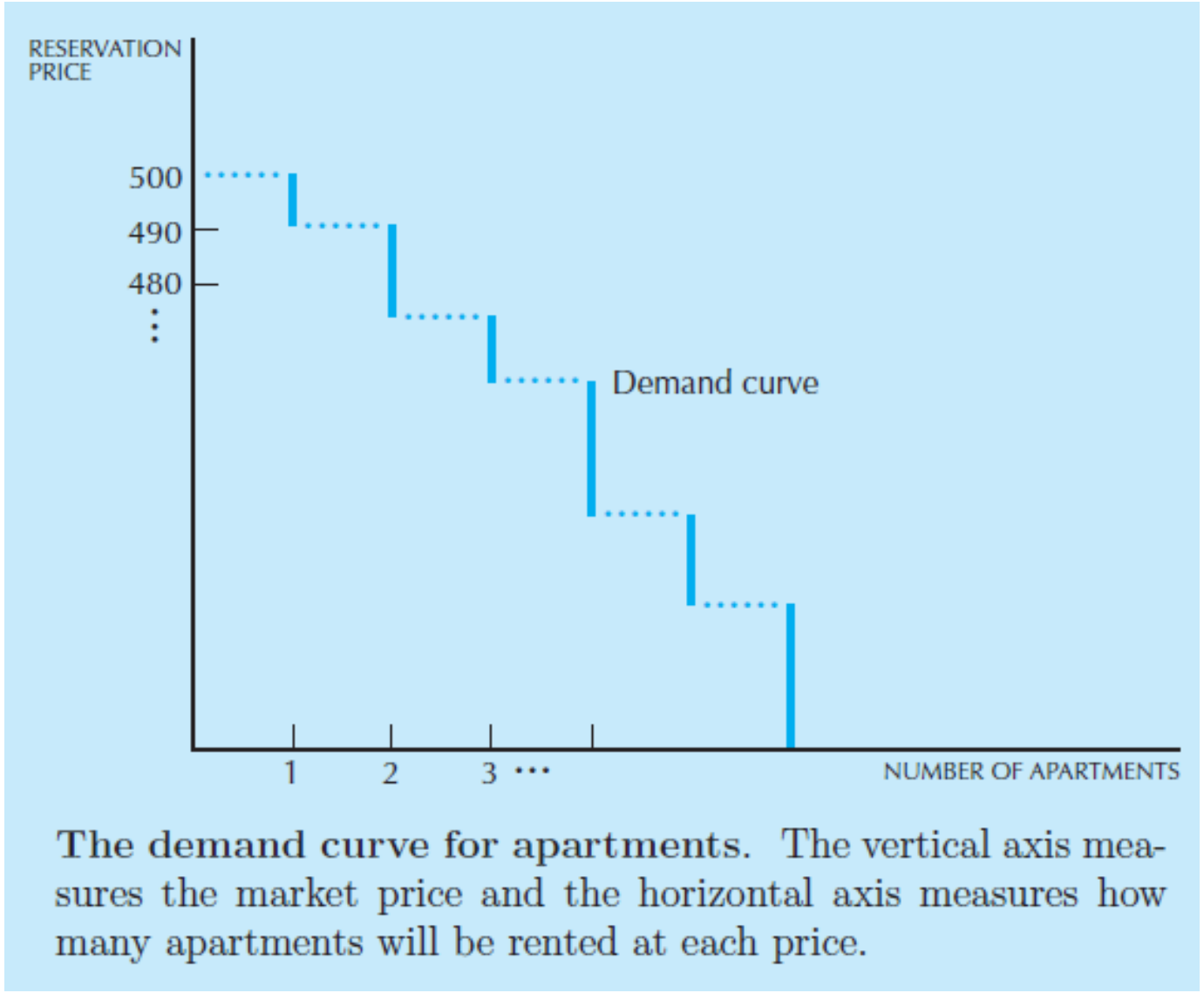
- Optimization: Each person tries to choose the best alternative available to him or her.
- Equilibrium: Market price adjusts until quantity demanded equals quantity supplied.

Modeling Individual Demand

- Discrete commodity: 0 or 1 unit
- Choose either distant or close apartment
- Close apartments are more desirable but more expensive
- Tend to choose close apartment if
  - Distant apartments are also expensive.
  - Higher income.
- Decide: The maximum rent you are willing to pay for a close apartment.

Modeling Market Demand

- Demand: Suppose the most any one person is willing to pay to rent a close apartment is \$500/month. Then $p = \$500 \Longrightarrow Q^D = 1$.
- Suppose the price has to drop to \$490 before a 2nd person would rent. Then $p = \$490 \Longrightarrow Q^D = 2$.



The demand curve for apartments. The vertical axis measures the market price and the horizontal axis measures how many apartments will be rented at each price.

- reservation price： a person’s maximum willingness to pay for something。

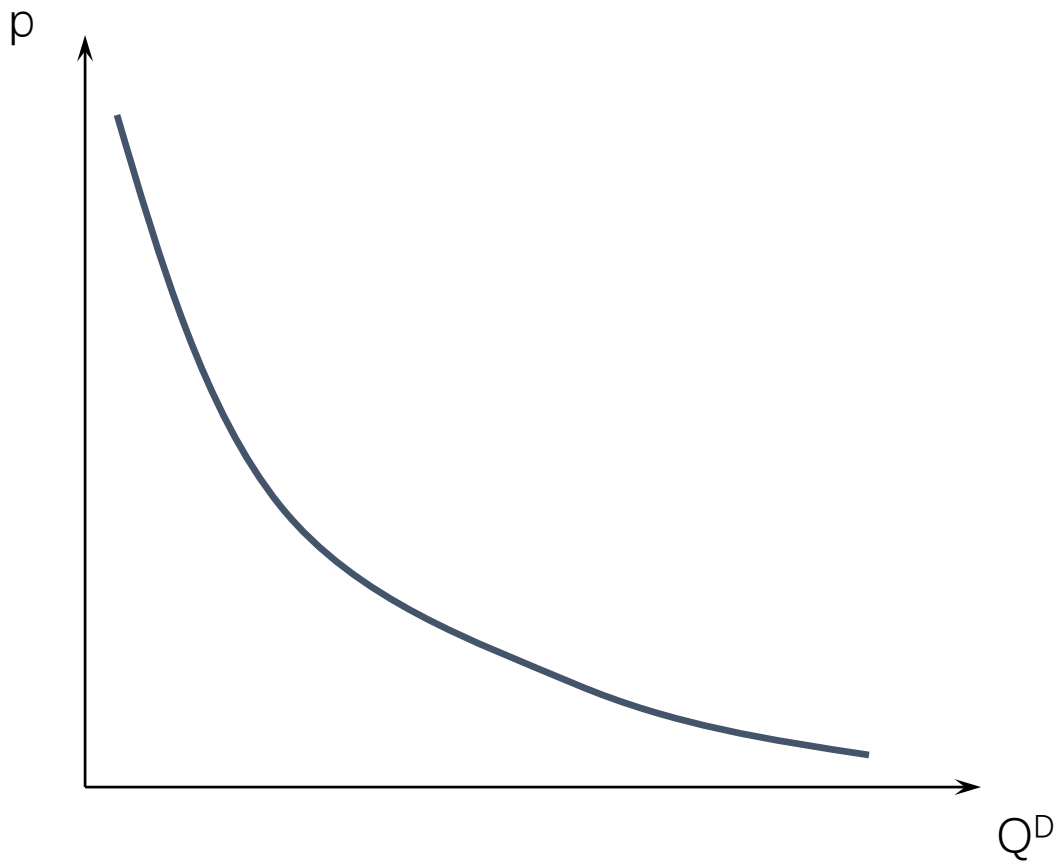
Modeling Apartment Demand

- The lower is the rental rate p, the larger is the quantity of close apartments demanded

$$p \downarrow \Rightarrow Q^D \uparrow.$$

- The quantity demanded vs. price graph is the market demand curve for close apartments.

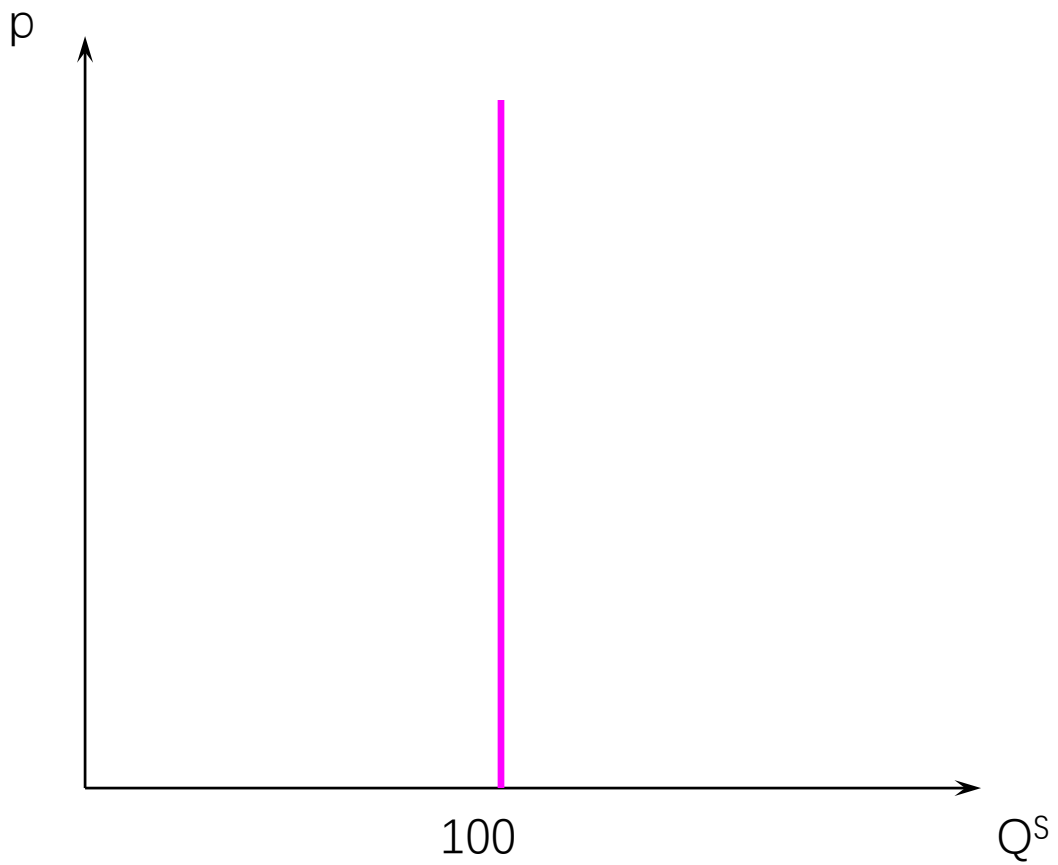
Market Demand Curve for Apartments



Modeling Apartment Supply

- Supply: It takes time to build more close apartments so in this short-run the quantity available is fixed (at say 100).

Market Supply Curve for Apartments



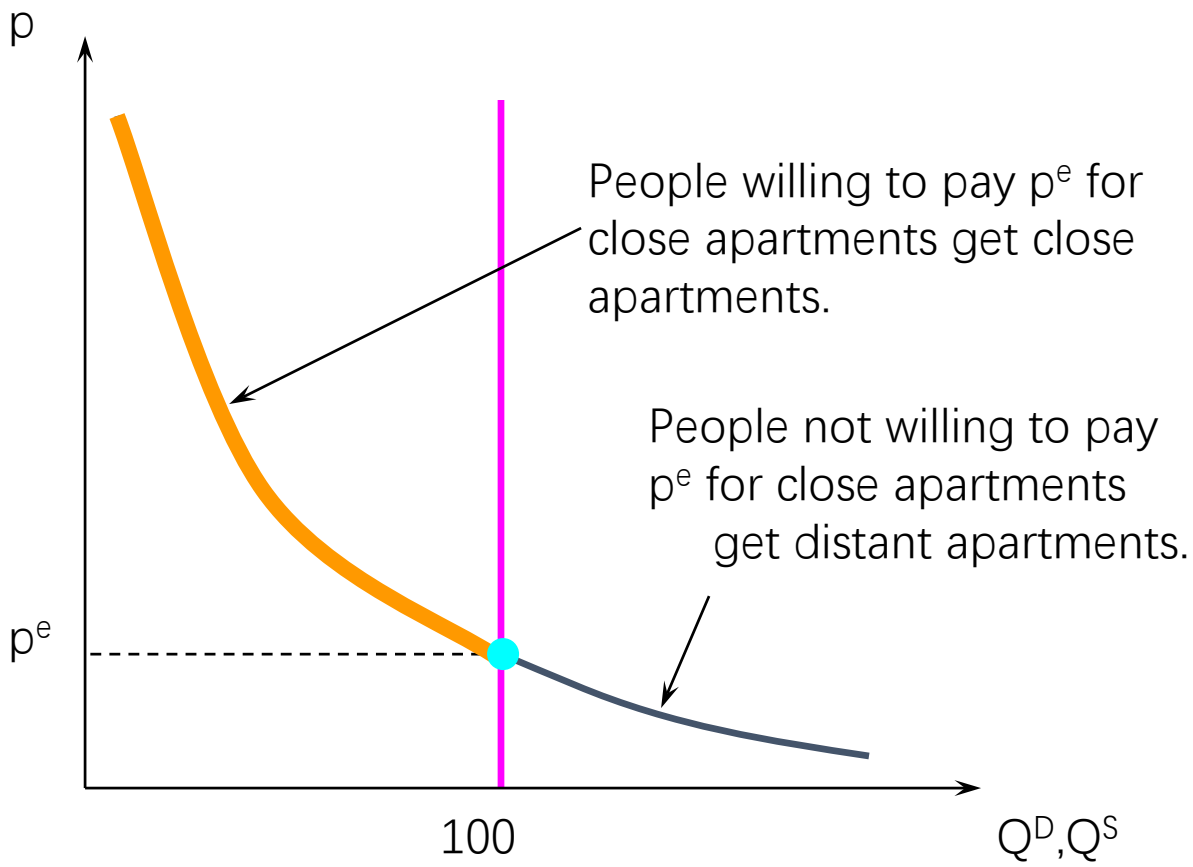
Competitive Market Equilibrium

- “low” rental price $\Rightarrow$ quantity demanded of close apartments exceeds quantity available $\Rightarrow$ price will rise.
- “high” rental price $\Rightarrow$ quantity demanded less than quantity available $\Rightarrow$ price will fall.

Competitive Market Equilibrium

- Quantity demanded = quantity available
  $\Rightarrow$ price will neither rise nor fall
- so the market is at a competitive equilibrium.

Competitive Market Equilibrium



Competitive Market Equilibrium

- Q: Who rents the close apartments?
- A: Those most willing to pay.
- Q: Who rents the distant apartments?
- A: Those least willing to pay.
- So the competitive market allocation is by “willingness-to-pay”.

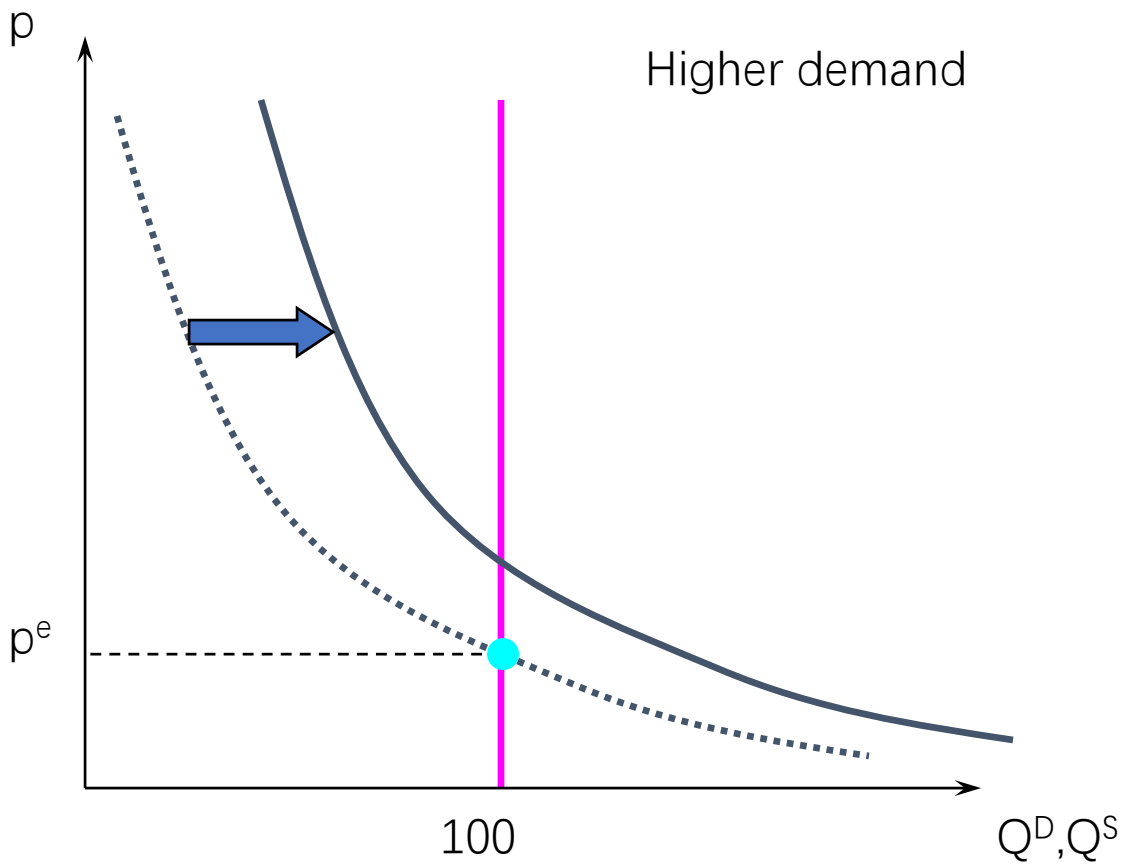
Comparative Statics

- What is exogenous in the model?
  - price of distant apartments
  - quantity of close apartments
  - incomes of potential renters.
- What happens if these exogenous variables change?

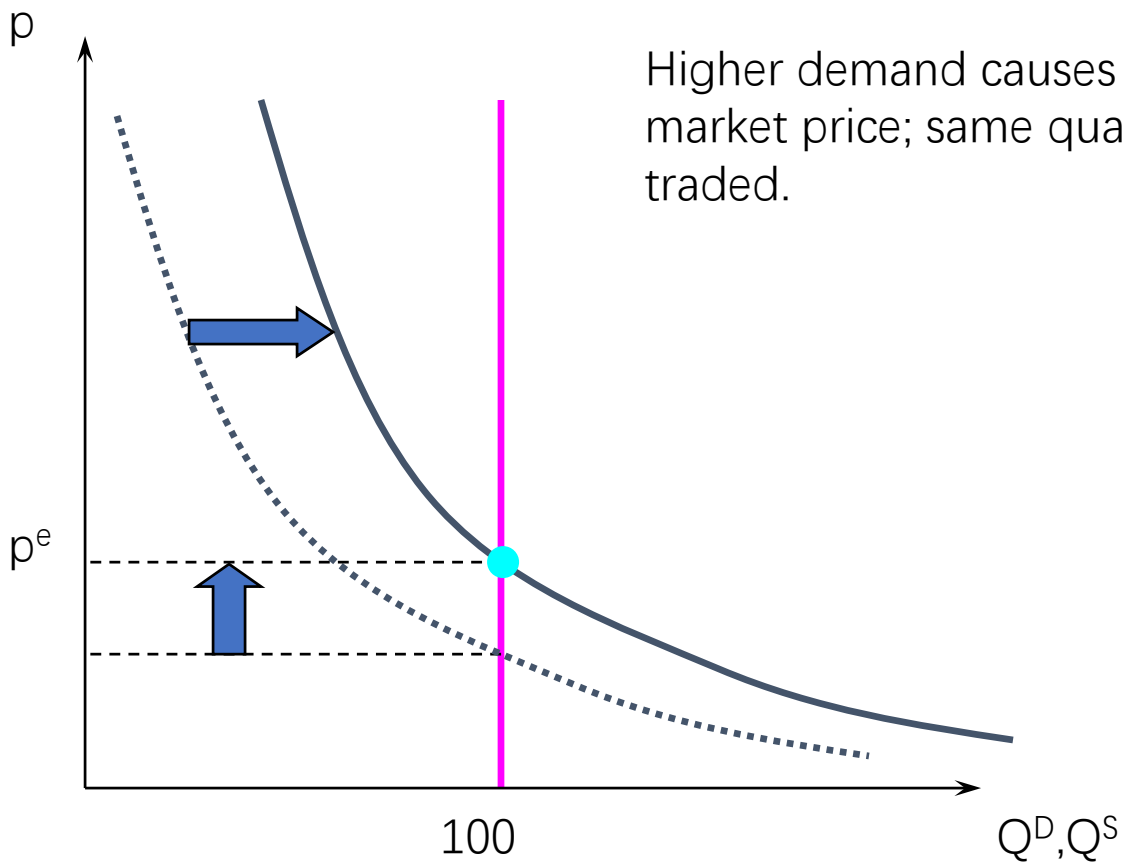
Comparative Statics

- Suppose the price of distant apartment rises.
- Demand for close apartments increases (rightward shift), causing a higher price for close apartments.

Market Equilibrium



Market Equilibrium

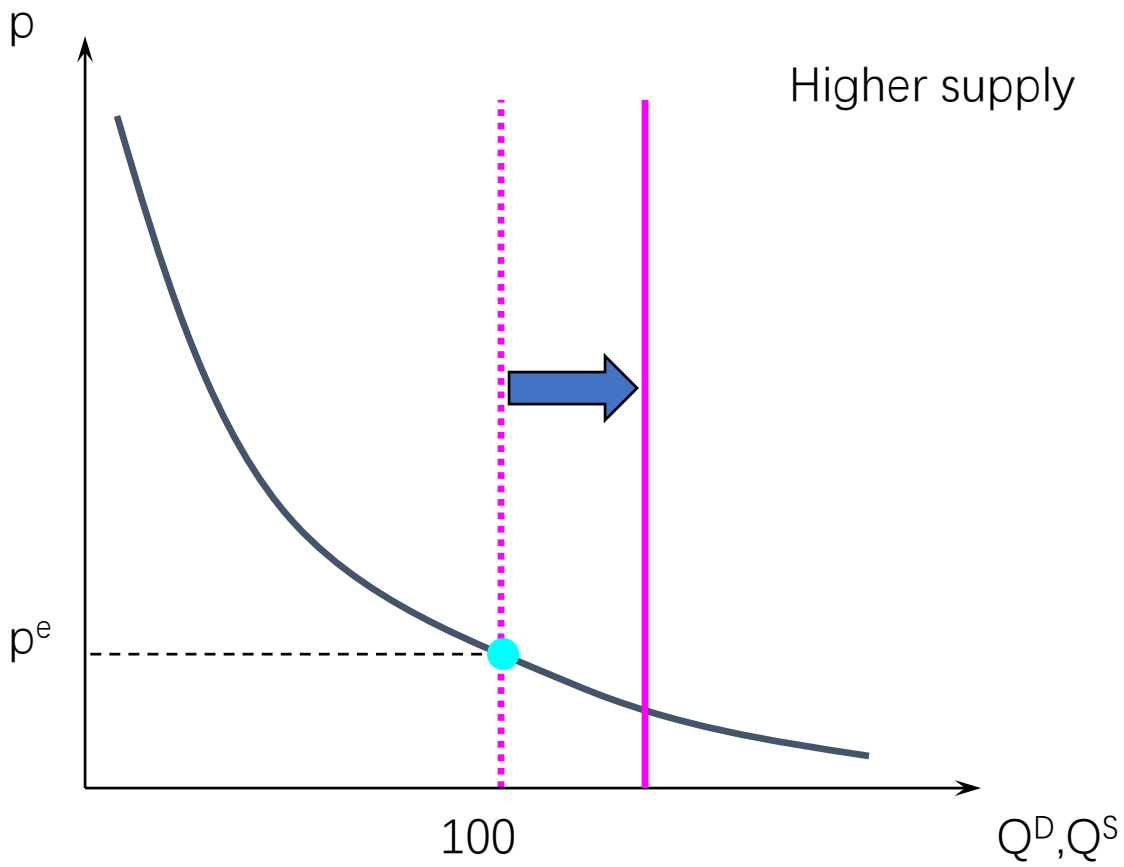


Higher demand causes higher market price; same quantity traded.

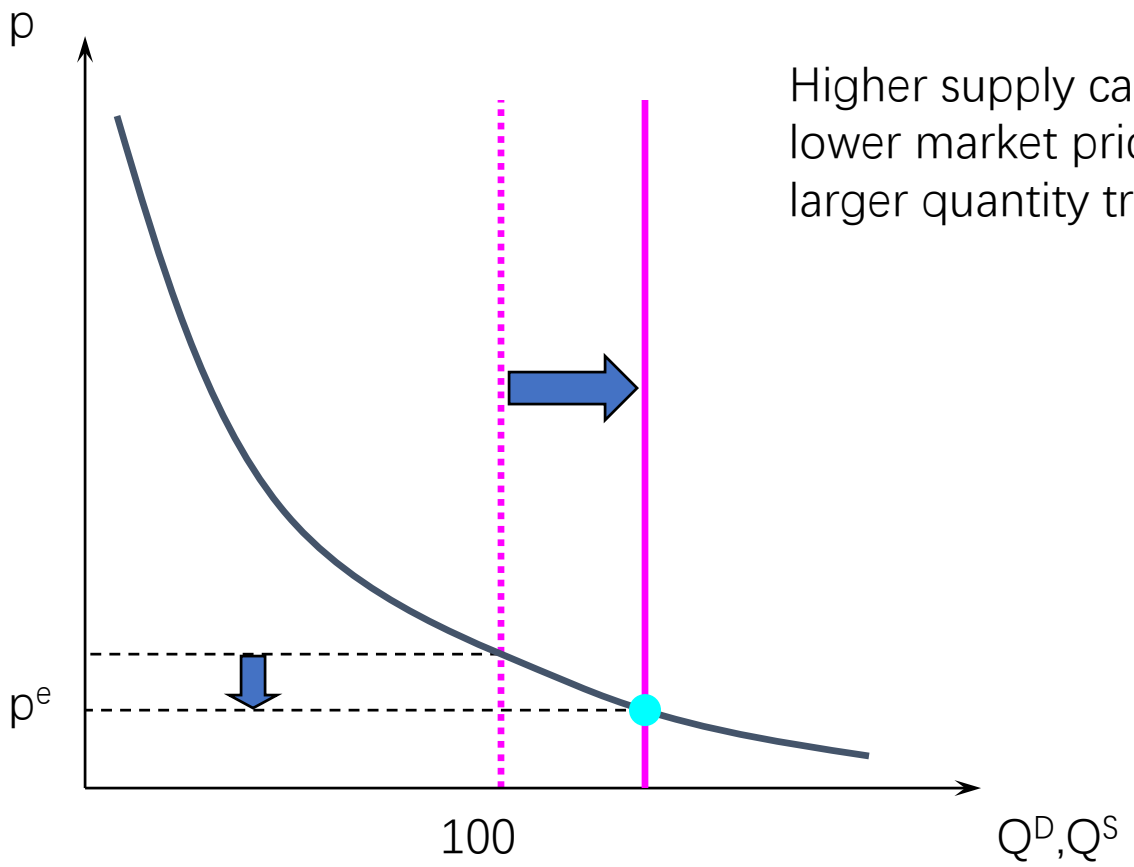
Comparative Statics

- Suppose there were more close apartments.
- Supply is greater, so the price for close apartments falls.

Market Equilibrium



Market Equilibrium

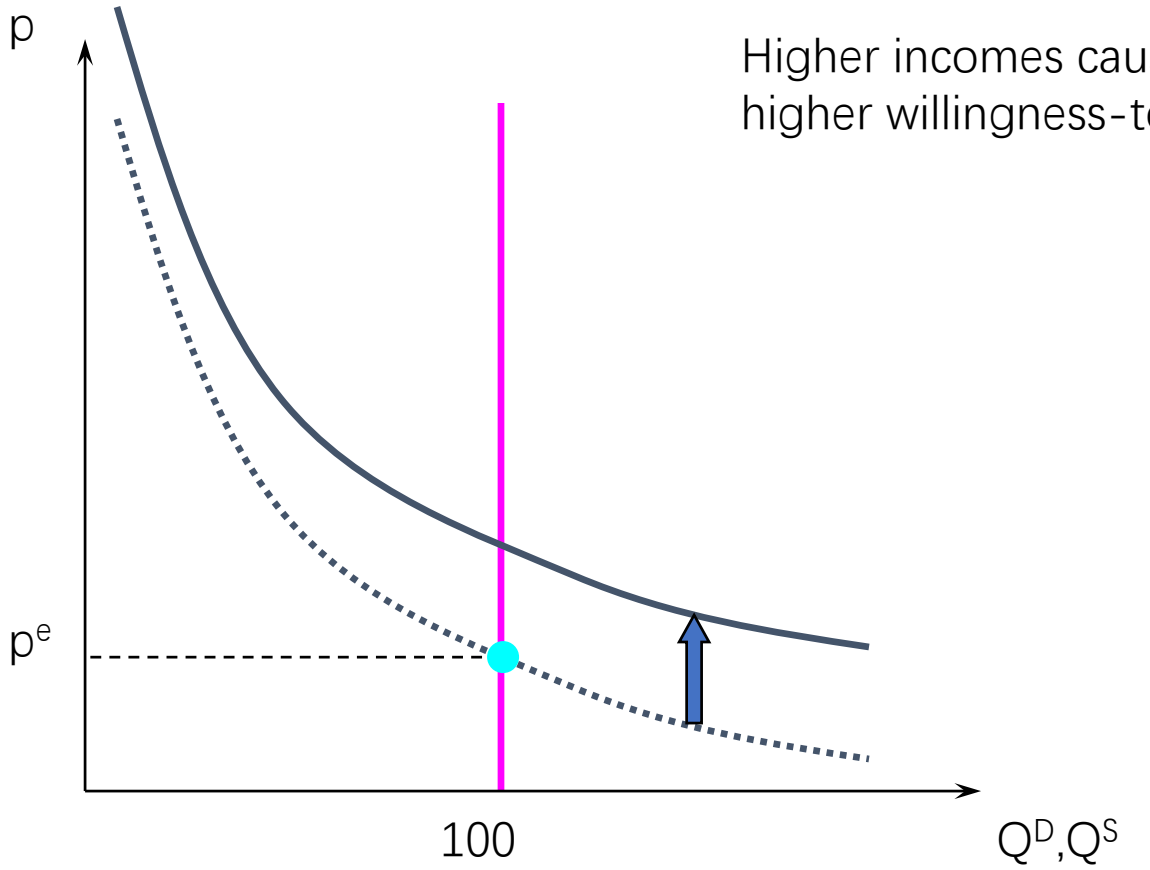


Higher supply causes a lower market price and a larger quantity traded.

Comparative Statics

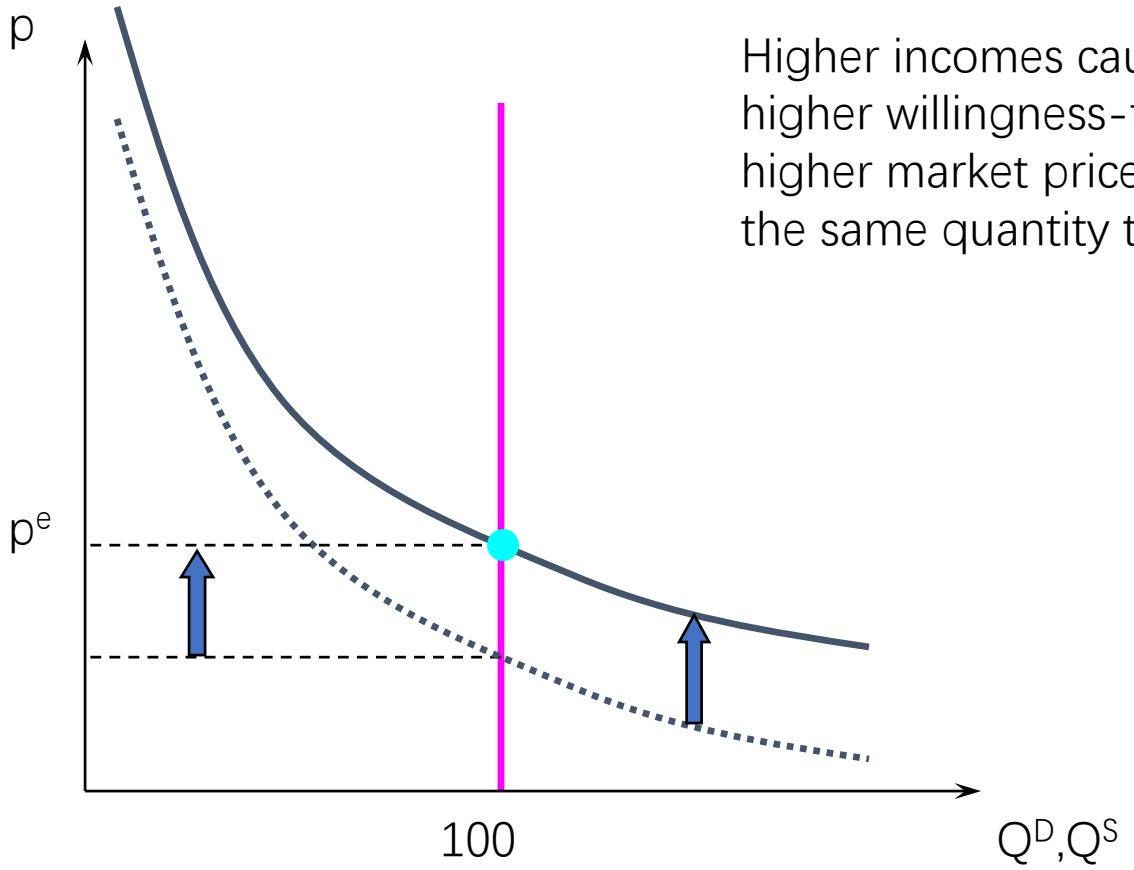
- Suppose potential renters' incomes rise, increasing their willingness-to-pay for close apartments.
- Demand rises (upward shift), causing higher price for close apartments.

Market Equilibrium



Higher incomes cause
higher willingness-to-pay

Market Equilibrium



Higher incomes cause higher willingness-to-pay, higher market price, and the same quantity traded.

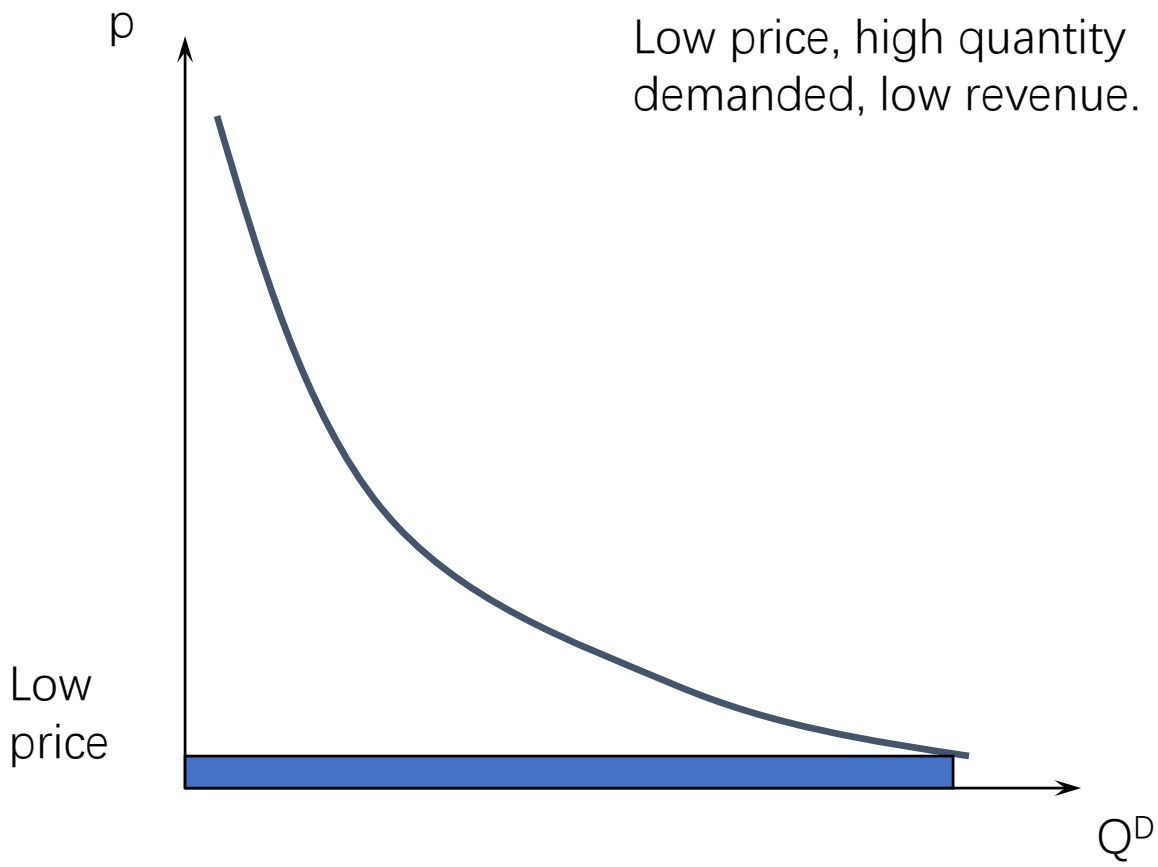
Imperfectly Competitive Markets

- Amongst many possibilities are:
  - a monopolistic landlord
  - a perfectly discriminatory monopolistic landlord
  - a competitive market subject to rent control.

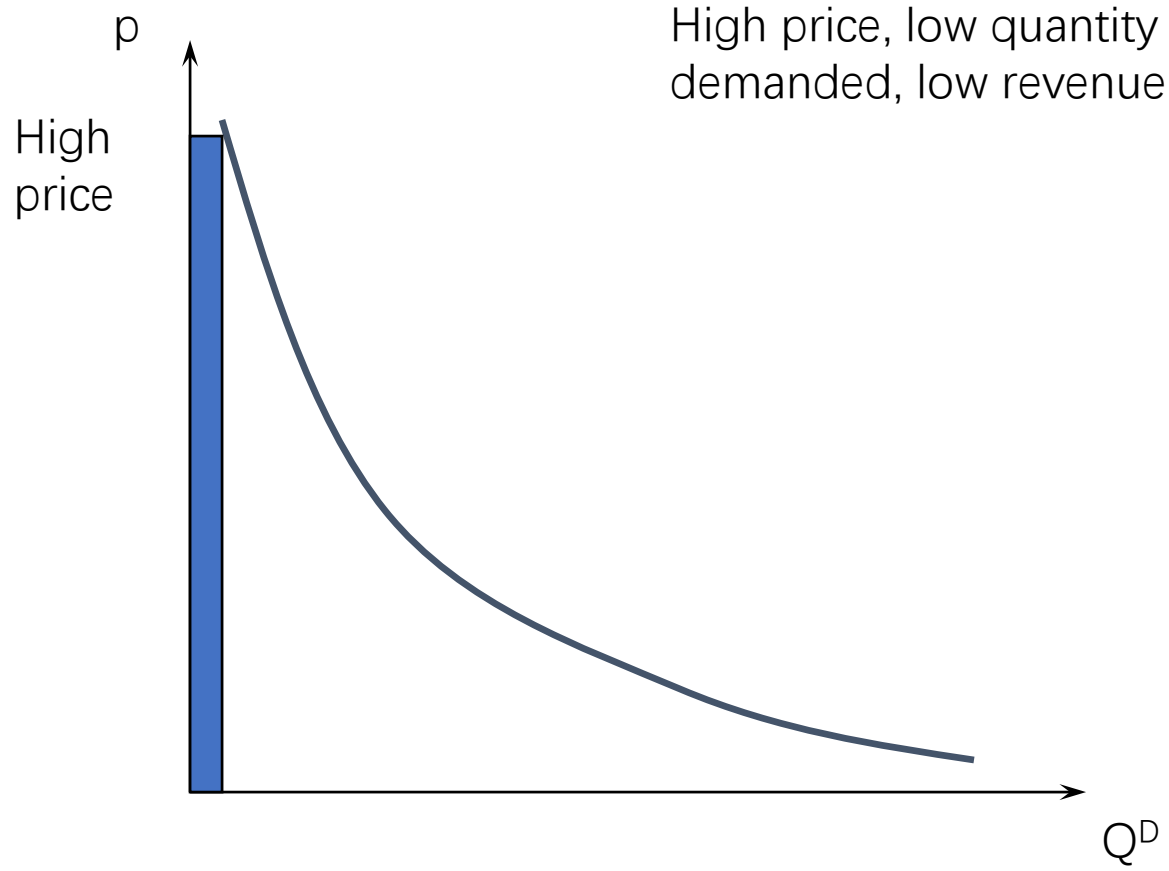
A Monopolistic Landlord

- When the landlord sets a rental price p he rents D(p) apartments.
- Revenue = pD(p).
- Revenue is low if $p \approx 0$
- Revenue is low if p is so high that $D(p) \approx 0$.
- An intermediate value for p maximizes revenue.

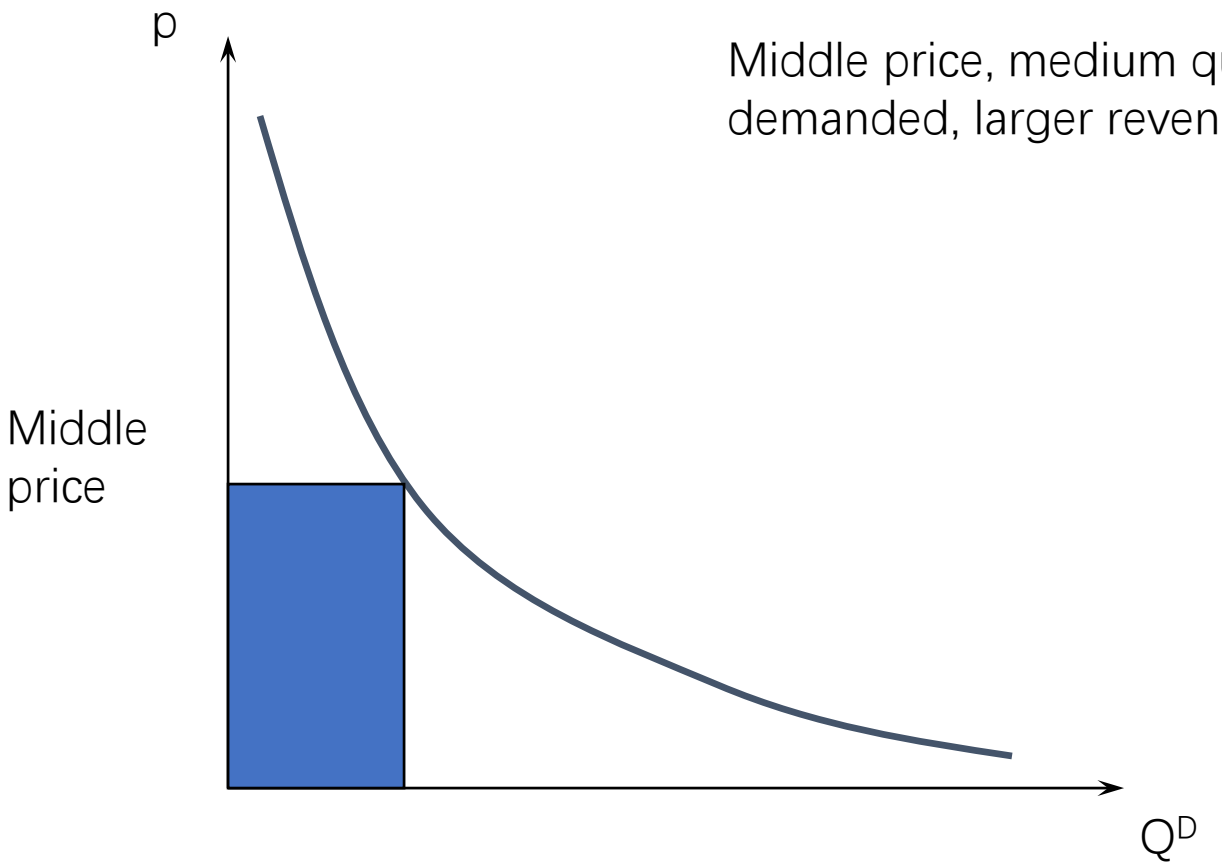
Monopolistic Market Equilibrium



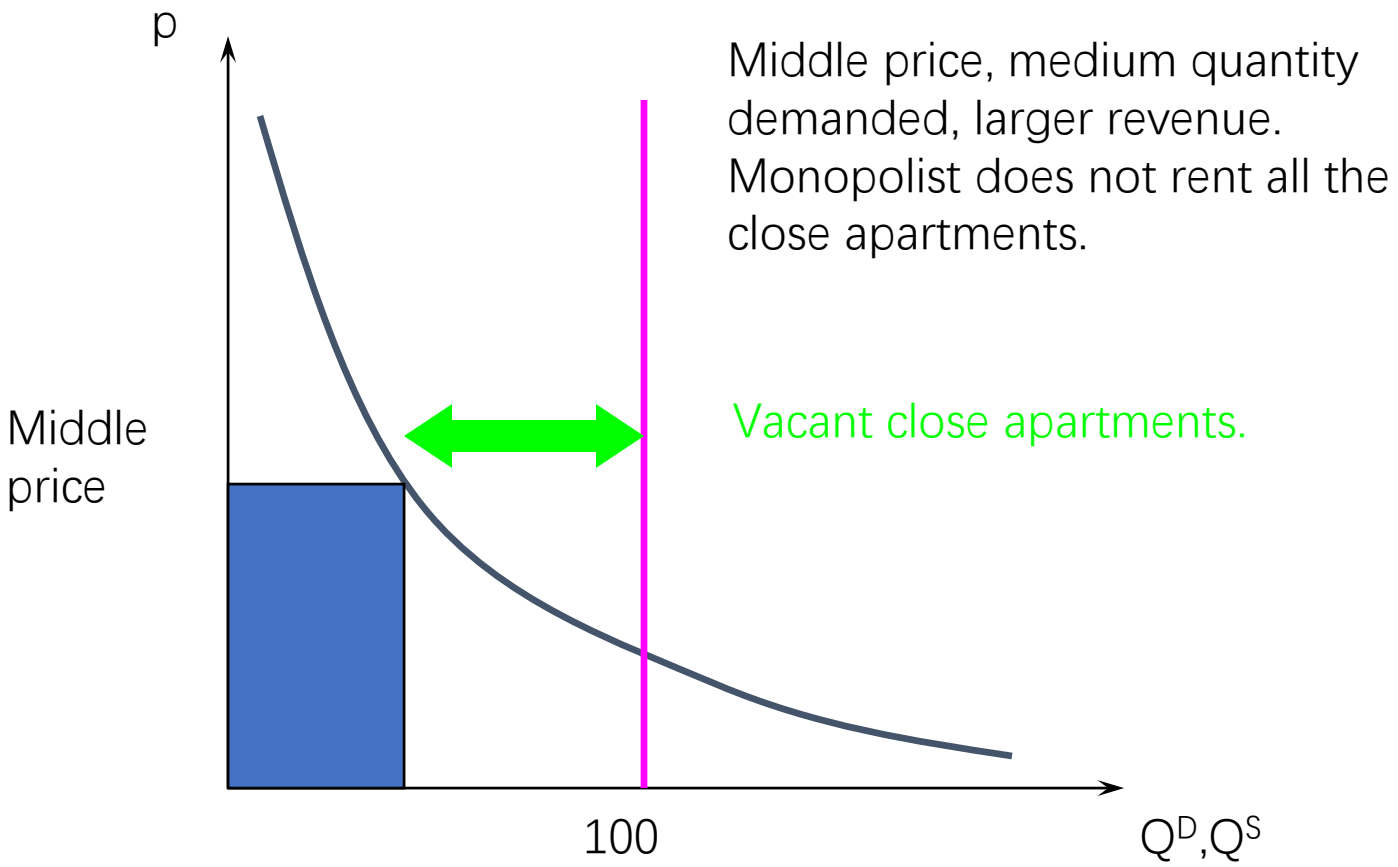
Monopolistic Market Equilibrium



Monopolistic Market Equilibrium



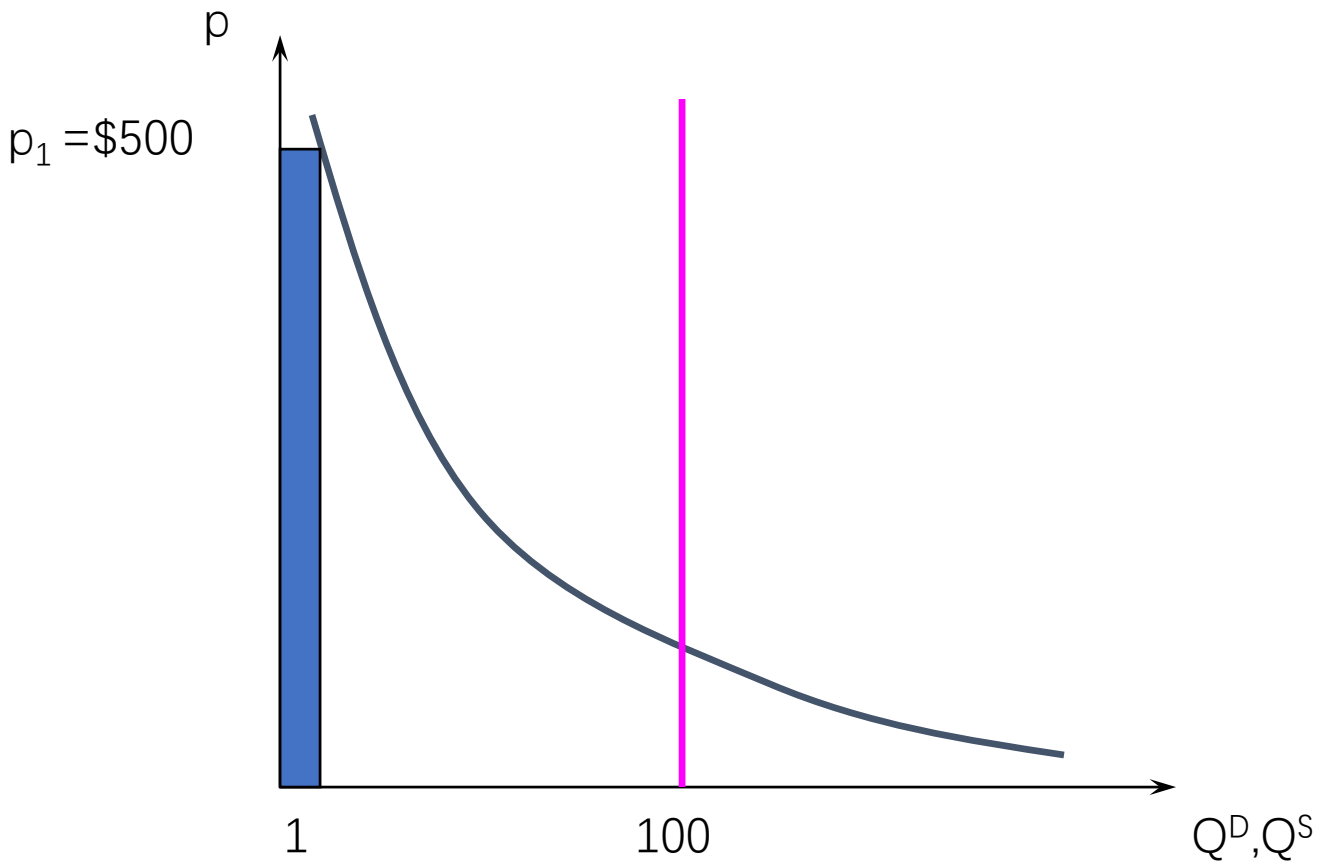
Monopolistic Market Equilibrium



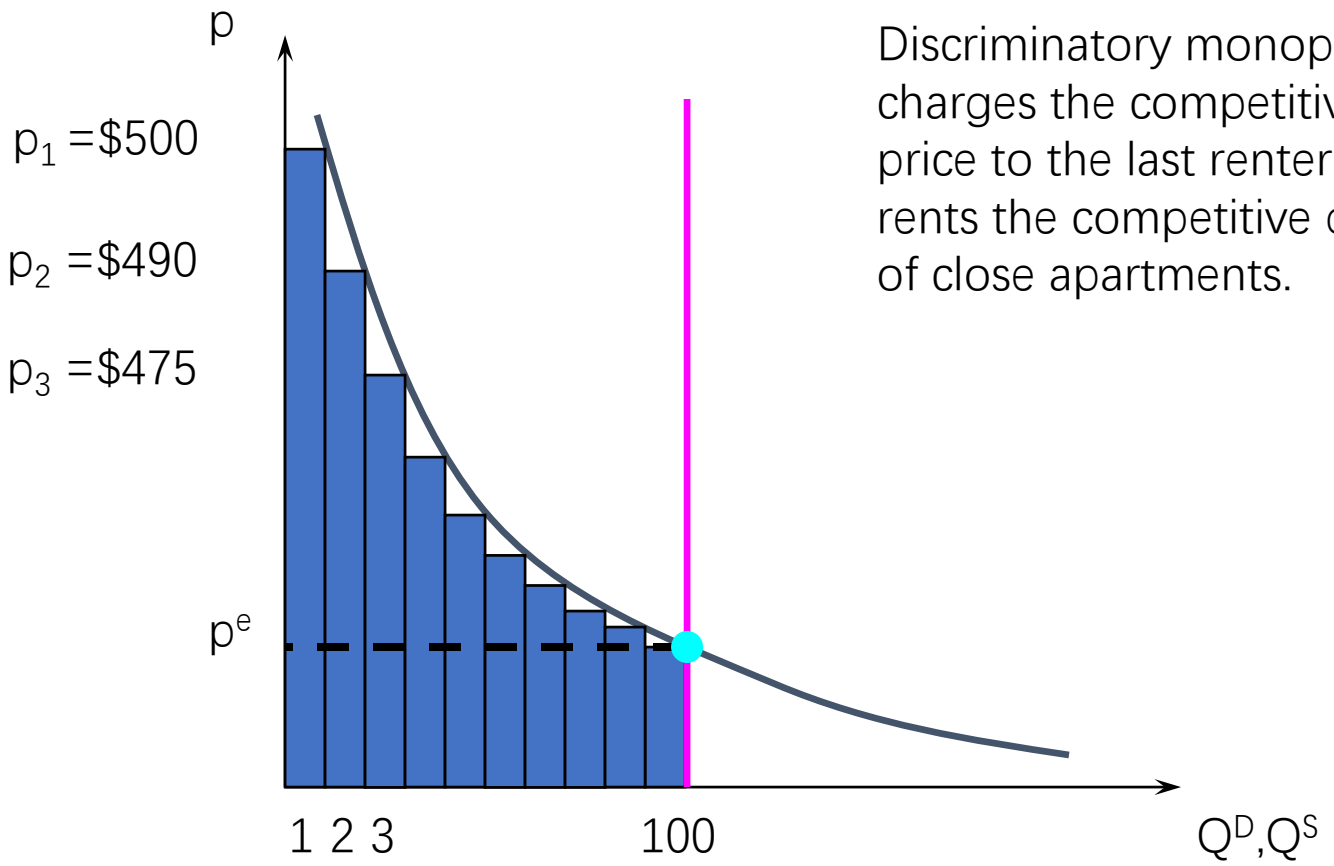
Perfectly Discriminatory Monopolistic Landlord

- Imagine the monopolist knew everyone’s willingness-to-pay.
- Charge $500 to the most willing-to-pay,
- charge $490 to the 2nd most willing-to-pay, etc.

Discriminatory Monopolistic Market Equilibrium



Discriminatory Monopolistic Market Equilibrium

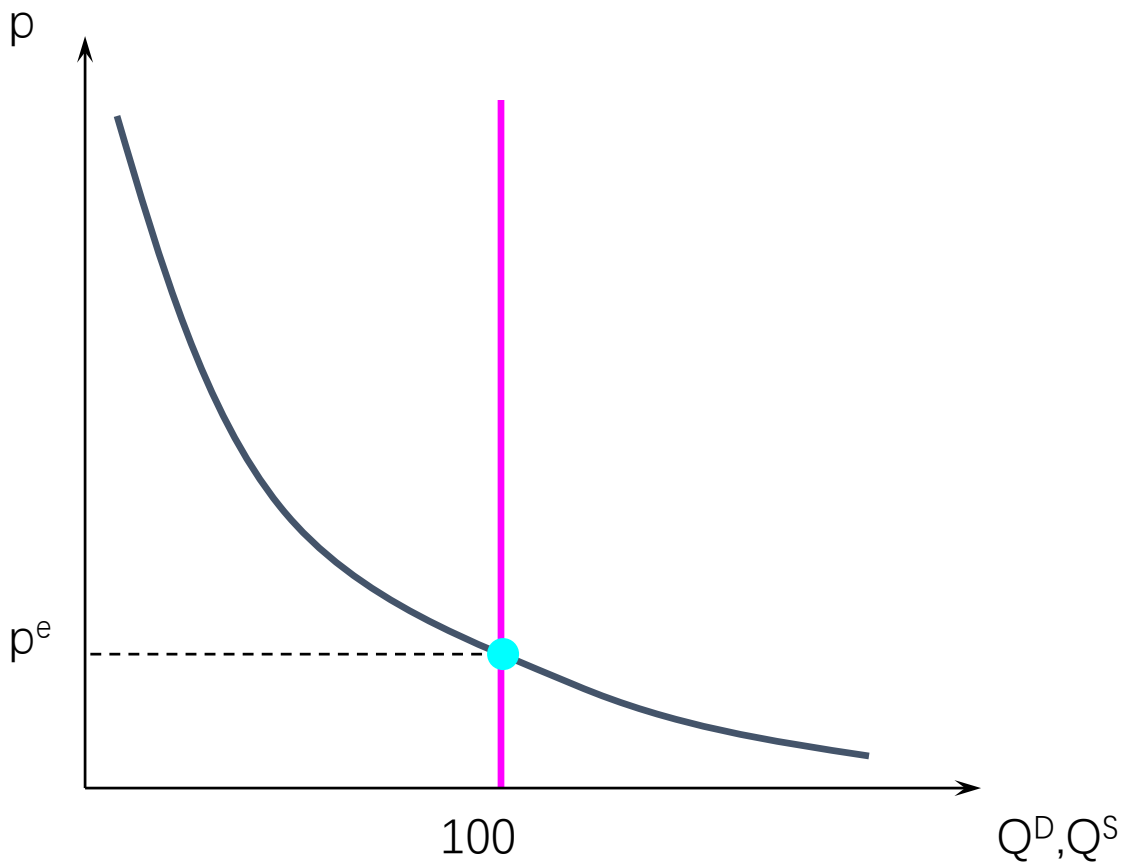


Discriminatory monopolist charges the competitive market price to the last renter, and rents the competitive quantity of close apartments.

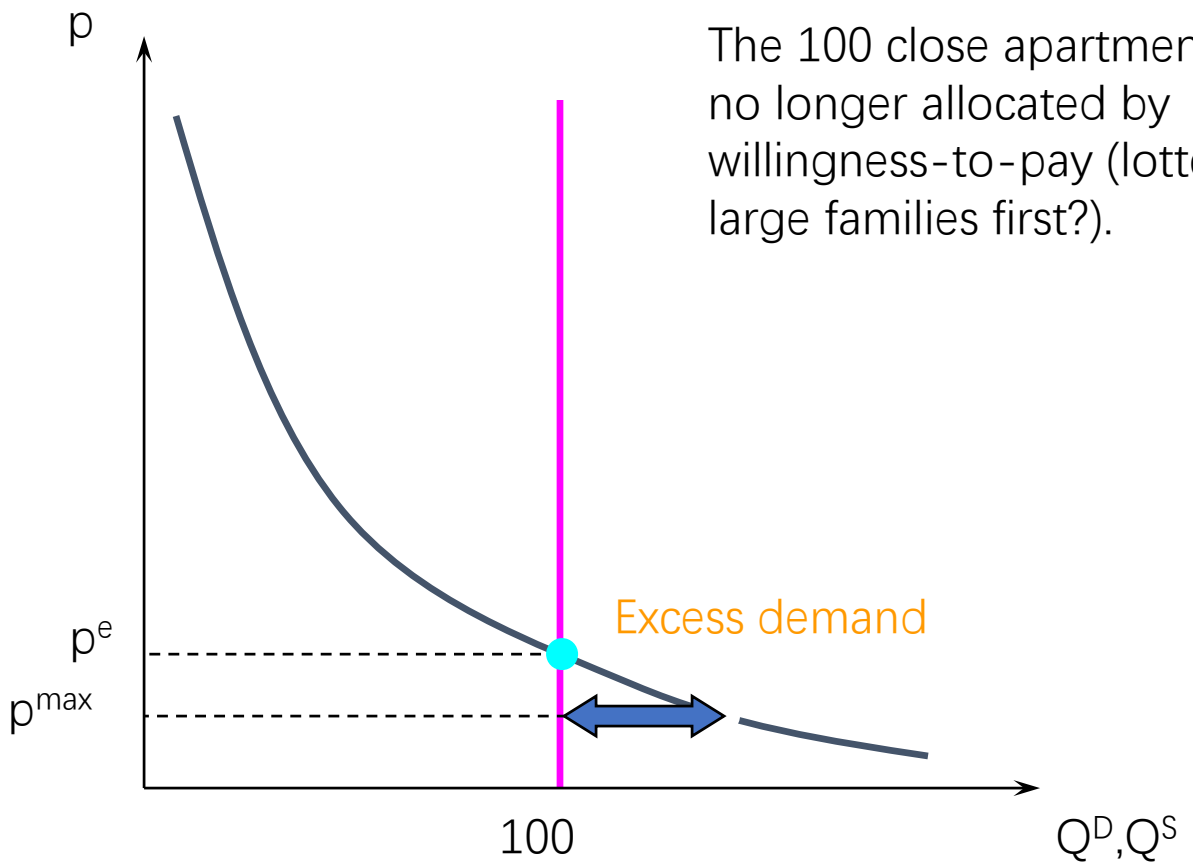
Rent Control

- Local government imposes a maximum legal price, $p^{max} < p^{e}$, the competitive price.

Market Equilibrium



Market Equilibrium



The 100 close apartments are no longer allocated by willingness-to-pay (lottery, lines, large families first?).

Which Market Outcomes Are Desirable?

- Which is better?
  - Rent control
  - Perfect competition
  - Monopoly
  - Discriminatory monopoly

Pareto Efficiency

- Vilfredo Pareto; 1848-1923.
- A Pareto outcome allows no “wasted welfare”;
- i.e. the only way one person’s welfare can be improved is to lower another person’s welfare.

Pareto Efficiency

- Jill has an apartment; Jack does not.
- Jill values the apartment at $200; Jack would pay $400 for it.
- Jill could sublet the apartment to Jack for $300.
- Both gain, so it was Pareto inefficient for Jill to have the apartment.

Criterion for Pareto Efficiency

- A Pareto inefficient outcome means there remain unrealized mutual gains-to-trade.
- Any market outcome that achieves all possible gains-to-trade must be Pareto efficient.

Pareto Efficiency

- Competitive equilibrium:
  - all close apartment renters value them at the market price p^e or more
  - all others value close apartments at less than p^e
  - so no mutually beneficial trades remain
  - so the outcome is Pareto efficient.

Pareto Efficiency

- Discriminatory Monopoly:
  - assignment of apartments is the same as with the perfectly competitive market
  - so the discriminatory monopoly outcome is also Pareto efficient.

Pareto Efficiency

- Monopoly:
  - not all apartments are occupied
  - so a distant apartment renter could be assigned a close apartment and have higher welfare without lowering anybody else’s welfare.
  - so the monopoly outcome is Pareto inefficient.

Pareto Efficiency

- Rent Control:
  - some close apartments are assigned to renters valuing them at below the competitive price p^e
  - some renters valuing a close apartment above p^e don’t get close apartments
  - Pareto inefficient outcome.

Harder Questions

- Over time, will
  - the supply of close apartments increase?
  - rent control decrease the supply of apartments?
  - a monopolist supply more apartments than a competitive rental market?

Testing Hypotheses

- What cause rents to change?
  - price of distant apartments
  - incomes of potential renters
  - quantity of close apartments.
- Need econometrics